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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,431	07/02/2001	Yuri Granik	MEGC117332	1914
26389	7590	01/21/2005	EXAMINER	
CHRISTENSEN, O'CONNOR, JOHNSON, KINDNESS, PLLC 1420 FIFTH AVENUE SUITE 2800 SEATTLE, WA 98101-2347			HOGAN, MARY C	
			ART UNIT	PAPER NUMBER
			2123	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/898,431	GRANIK ET AL.	
	Examiner	Art Unit	
	Mary C Hogan	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/16/02</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application has been examined.
2. **Claims 1-25** have been examined and rejected.

Claim Objections

3. **Claim 17** is objected to because of the following informalities. Appropriate correction is required.
4. **Claim 17** recites the following limitation: “adjusting the third set of data that defines a pattern of objects to be created lithographically until a simulation of a pattern created lithographically from the third set of data substantially matches the new target layer”. Taking into consideration claim 15, the “new target layer” in input to the OPC algorithm. This data is used as a “third set of data” that can and is “adjusted” by the OPC algorithm. Since the data from the new target layer is adjusted by this OPC loop, it is therefore changed. Therefore, it is unclear as to how the adjusted third set of data can now “substantially match” the original “new target layer” data if this “new target layer” data is adjusted by the OPC loop. Further, it is unclear as to how “substantially matches” is defined.

Claim Interpretation

5. **Claim 17** recites the following limitation: “adjusting the third set of data that defines a pattern of objects to be created lithographically until a simulation of a pattern created lithographically from the third set of data substantially matches the new target layer”. Taking into consideration claim 15, the “new target layer” in input to the OPC algorithm. This data is used as a “third set of data” that can and is “adjusted” by the OPC algorithm. Since the data from the new target layer is adjusted by this OPC loop, it is therefore changed. Therefore, it is unclear as to how the adjusted third set of data can now “substantially match” the original “new target layer” data if this “new target layer” data is adjusted by the OPC loop. Further, it is unclear as to how “substantially matches” is defined. Given this discussion, Claim 17 was interpreted to mean that the third set of data is adjusted until the data is in a form that is meets a designated specification of a layout design, determined through means that also tests the new target layer before it is adjusted. The new target layer and adjusted data are tested using the same specifications that they must conform to, therefore, they must “substantially match” each other in some way in order to meet the same specifications.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1-25** are rejected under 35 U.S.C. 102(e) as being anticipated by Pierrat et al (U.S. Patent Number 6,584,609), herein referred to as **Pierrat**.

8. As to **Claims 1, 2, 5, 8, 9, 12, 15, 20 and 23**, **Pierrat** teaches: A method of compensating mask/reticle (target layer) data for lithographic process distortions, comprising the acts of: reading a first set of mask/reticle data that defines at least one feature to be created lithographically (Figure 7, element 720 and column 6, lines 47-51); performing a simulation of the etch effects (error due to etch distortions) that would occur if a wafer is created using a mask/reticle corresponding to the first set of mask/reticle (target layer) data (Figure 7, element 730, column 6, lines 53-55, column 5, lines 21-32); using the results of the etch simulation (error due to etch distortion) to create a second set of mask/reticle data that defines at least one new or modified feature to be created lithographically (Figure 7, element 730, column 6, lines 53-58, column 5, lines 21-32) wherein etch biases are calculated for each manufacturing process and applied in an OPC loop with the manufacturing OPC model (column 5, lines 21-32, Figure 7, elements 730, 740, 750); and performing optical process correction (OPC) using the second set of mask/reticle data as an input to create a third set of mask/reticle data that, when used in a lithographic process, will produce a set of objects on a wafer that substantially matches the new target layer (Figure 7, flow of elements 750, 730, 740, 770, column 6, lines 60-column 7, line 4); exporting the third set of mask/reticle data to a mask/reticle writer to manufacture a corresponding mask/reticle and using the mask/reticle to create the device on the wafer (Figure 7, element 770).

9. As to **Claims 3, 4, 6, 7, 10, 11, 13, 14, 18, 19, 21, 22, 24 and 25**, **Pierrat** teaches: in which the step of performing a simulation includes accessing a set of predetermined rules for the etch process

(column 5, lines 28-40, column 13, lines 47-53). The model is stored in the storage area of the computer system running the simulation (Figure 12, elements 1220, 1225, 1240). Since models of different manufacturing processes are made and each model includes etching effects due to wet or dry effects, it is known that this data will be stored in memory. Therefore, when the simulation is run, the memory, or "table" is accessed to extract these values for etch effect.

10. As to **Claim 16, Pierrat** teaches: the method of claim 15, wherein the optical process correction algorithm corrects the third set of data for optical and resists distortions (Figure 7, loop of elements 750, 730 and 740 and description, column 5, lines 29-33).

11. As to **Claim 17, Pierrat** teaches: In the method of claim 15, wherein the optical process correction algorithm simulates optical process distortions in a lithographic process (Figure 7, loop of elements 750, 730 and 740 and description, column 5, lines 29-33); and adjusting the third set of data that defines a pattern of objects to be created lithographically until a simulation of a pattern created lithographically from the third set of data substantially matches the new target layer (Figure 7, element 740 and description).

Conclusion

12. The prior art made of record, see PTO 892, and not relied upon is considered pertinent to applicant's disclosure, careful consideration must be given prior to Applicant's response to this Office Action.

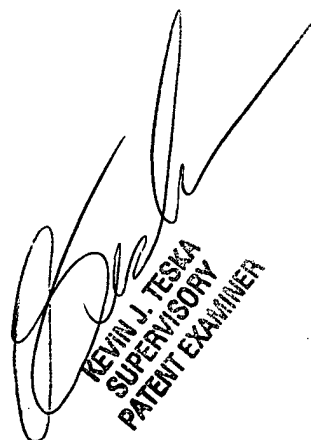
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C Hogan whose telephone number is 571-272-3712. The examiner can normally be reached on 7:30AM-5PM Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 571-272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary C Hogan
Examiner

Application/Control Number: 09/898,431
Art Unit: 2123

Page 5

Art Unit 2123



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